

# BMJ Open Risk behaviours and prevalence of sexually transmitted infections and HIV in a group of Dominican gay men, other men who have sex with men and transgender women

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## ABSTRACT

**Objectives:** The objectives of this study were to estimate the point prevalence of sexually transmitted infection (STI) and to investigate the sexual practices and behaviours associated with STIs in a group of gay men, other men who have sex with men and transgender women (GMT) in the province of La Romana, Dominican Republic.

**Design:** A cross-sectional study of a convenience sample of GMT persons.

**Setting:** The study was conducted in the province of La Romana, Dominican Republic, in June–July 2013.

**Participants:** Out of 117 GMT persons screened, a total of 100 completed the study. Participants had to be at least 18 years of age, reside in La Romana and have had sex with another man in the preceding 12 months. All participants were interviewed and tested for STI.

**Primary outcome measure:** The main outcome of interest was the detection of any STI (HIV, herpes simplex virus type 2 (HSV-2), syphilis, hepatitis B or C) by serology.

**Results:** Among 100 participants, the median age was 22 years (range 18–65). One-third had consumed illicit drugs the preceding year and only 43% consistently used condoms. Prevalence was 38% for HSV-2, 5% for HIV and 13% for syphilis. There were no cases of hepatitis B or C. Factors associated with the odds of a STI were age >22 years (OR=11.1, 95% CI 3.6 to 34.5), receptive anal intercourse (OR=4.2, 95% CI 1.3 to 13.6) and having ≥2 male sexual partners during the preceding month (OR=4, 95% CI 1.3 to 12.5).

**Conclusions:** In this group of GMT persons, seroprevalence of STI was high, and a number of risk behaviours were associated with STI. These preliminary data will help inform policy and programmes to prevent HIV/STI in GMT persons in the region.

## INTRODUCTION

Gay men, other men who have sex with men and transgender women (GMT) in the Latin

## Strengths and limitations of this study

- This study estimated point prevalence and identified risk factors for sexually transmitted infection (STI) in a group of Dominican gay men, other men who have sex with men and transgender women (GMT) residing in La Romana, a previously unstudied population.
- To our knowledge, this is the first study to estimate point prevalence of herpes simplex virus type 2 in Dominican GMT.
- We interviewed a significant number of bisexual sex workers who are important targets for HIV prevention.
- Limitations include the cross-sectional design, reliance on self-reported behaviours and relatively small sample size.

American and Caribbean (LAC) region are at high risk of acquiring sexually transmitted infections (STIs). Recent systematic reviews report a median prevalence of syphilis and HIV in this population of 8% and 11%, respectively, with the Caribbean subregion reporting the highest adult HIV prevalence outside of Africa.<sup>1–3</sup> Prevalence of hepatitis B virus (HBV) is estimated at 2–4% in the general population of the Caribbean,<sup>4</sup> and hepatitis C virus (HCV) prevalence is approximately 1.2% in the greater LAC region.<sup>5</sup> Historically, the HIV epidemic in the Dominican Republic (DR) was considered generalised, but the country has transitioned to a more concentrated epidemic that disproportionately affects GMT,<sup>6</sup> who contribute one-third of new infections.<sup>7</sup> The Eastern region of the country reports a higher than average prevalence of HIV (5%), syphilis (10%) and HBV (4.3%) in GMT persons.<sup>8</sup> The convergence in that region of thriving

tourism and construction industries, large numbers of mobile populations, and high commercial sex work are likely fuelling the HIV/STI epidemic.

The stigmatisation of homosexuality in the DR precludes effective HIV/STI prevention.<sup>9</sup> A significant proportion of GMT are bisexual or have sex with other men for money which causes shame and engenders stigma.<sup>10</sup> In addition, a recent survey of Dominican GMT found that approximately 80% had consumed alcohol  $\geq 1$  day/week and 14% drank  $\geq 4$  days/week during the preceding month. Almost half reported consuming illicit drugs during the preceding 6 months.<sup>8</sup> These behaviours may place GMT at a higher risk of STI and HIV.

There are no published data on the prevalence of STI in GMT in the province of La Romana, arguably the most important urban centre of the Eastern region of the DR. Moreover, data are lacking on the relationship between risk behaviours and the acquisition of STI in Dominican GMT. A better understanding of the prevalence and risk factors for STI in this region would inform policy decisions in the country. Therefore, our objectives were to estimate the prevalence of STI and to examine the sexual practices and risk behaviours associated with STI in a group of GMT in the province of La Romana in DR.

## METHODS

All participants were informed of the risks and benefits of the study and provided signed informed consent. Study procedures were performed in accordance to local laws and institutional guidelines for the appropriate treatment of human participants.

### Study design and recruitment

This was a cross-sectional study of a convenience sample of GMT residing in La Romana, DR. Recruitment was carried out in June–July 2013 using snowball-like sampling and direct active recruitment. Fourteen GMT persons from the community were identified and recruited as ‘seeds’ by personnel of Este Amor, a non-governmental organisation working with GMT in the Eastern region of the country. Seeds were asked to recruit friends and acquaintances using a coupon system. Each eligible participant recruited by the original seeds was given two coupons and advised to distribute them to other men. In order to minimise sampling bias, some interviews were conducted in the evenings to reach the more affluent and employed GMT who were not available during daytime. To be included in the study, participants had to be at least 18 years of age, reside in La Romana and have had sex with another man in the preceding 12 months.

### Data collection

Individuals who consented for the study participated in an interview where questions were asked about sociodemographics, alcohol and drug use, sexual risk

behaviours and practices with men and women, HIV/STI knowledge and symptoms, healthcare-seeking practices, and experiences with stigma, discrimination and violence. Study data were collected and managed using the REDCap electronic data capture tool hosted at the University of Illinois at Chicago (Institute for Health Research and Policy grant UL1RR029879).

### Laboratory methods

After the interview, we performed HIV voluntary testing and counselling using a rapid, qualitative immunoassay for the detection of HIV 1 and 2 antibodies (Alere Determine HIV 1/2, Alere Medical Co., Chiba, Japan or Retrocheck HIV, Qualpro Diagnostics, Goa, India). Positive results were confirmed with an HIV ELISA. Blood was collected for serological testing for herpes simplex virus type 2 (HSV-2; IgG antibodies, Cobas, Roche Diagnostics, Mannheim, Germany), hepatitis B surface antigen (HBsAg II, COBAS, Roche Diagnostics GmbH, Mannheim, Germany), hepatitis C antibody (anti-HCV II, COBAS, Roche Diagnostics GmbH, Mannheim, Germany) and syphilis (*screening, non-treponemal testing*: Venereal Disease Research Laboratory Antigen, Becton Dickinson and Company, Sparks, Maryland, USA; *confirmatory, specific treponemal antibodies*: Fluorescent Treponemal Antibody Absorbed, Trepo-Spot IF, bioMérieux SA, Marcy-L'Étoile, France). All participants who tested positive for a STI were offered treatment free of charge. Participants newly diagnosed with HIV were referred for evaluation and treatment at Clinica de la Familia in La Romana. Participants who tested positive for HSV-2 were counselled on safe sex practices and advised of the risk of transmission to their partners. They were offered treatment only if active lesions were found on physical examination.

### Data analysis

Categorical variables were dichotomised based on the presence or absence of the characteristic being examined. To determine the risk of STI by sexual role, we dichotomised the variable ‘sexual role’ into individuals who gave a history of ever engaging in receptive anal intercourse versus those who were exclusively insertive. Educational level was analysed as a continuous variable. Age, number of sexual partners and number of days of alcohol consumption per week were analysed as continuous and categorical variables. Measures of central tendency and dispersion were calculated for continuous variables, and frequencies of categorical variables were obtained. Sexual concurrency was defined as having  $\geq 2$  sex partners in the same month. The main outcome of interest was the detection of any STI by serology. Bivariate analyses were conducted using  $\chi^2$  and t tests as appropriate. Stratified analysis was performed to look for potential effect modification and interactions. Multivariate logistic regression analysis was performed, and we included in the model variables showing a statistically significant association ( $p < 0.05$ ) with the outcome

in the bivariate analysis and a variable that, although not statistically significant in the bivariate analysis, was considered an important contributor to STI risk (ie, history of sex work). Interactions were tested in multivariate models. Data were analysed using SAS V.9.1.3 (SAS Institute Inc, Cary, North Carolina, USA).

## RESULTS

A total of 117 men were screened for the study. Eleven did not meet the inclusion criteria, two withdrew from participation and four men who declined STI testing were excluded from the final analysis. The final analytic group consisted of 100 participants. **Table 1** describes important demographic and behavioural characteristics of the group. Their median age was 22 years (range 18–65 years), and the median level of formal education was 10th grade (IQR 8–12). The majority (82%) of participants was single and 41% were unemployed. Three-quarters of the men had a monthly income that was less than the equivalent of US\$230 per month (RD \$10 000). One-third consumed illicit drugs during the preceding year and 11% were circumcised. The variable with highest percentage of missing values was sexual identity (26%), as a number of participants reported their sexual identity as other/don't know/no identity. Only 1%

was missing information on sex with tourists, alcohol use and age at first sex, respectively. For level of education, one value seemed implausible, so it was coded as missing. Missing values were not used in OR calculations.

### Sexual activity and identity

All men were sexually active. The median age of sexual debut was 14 years (IQR 12–16), and the median number of male sex partners during the preceding month was 1 (range 0–50). Almost all (83%) reported having had intercourse with a woman in their lifetime, and 65% reported having their first sexual experience with a woman. More than a third reported having sex with tourists, and 22% used sexual stimulants prior to intercourse. The majority (91%) had a recent history of concurrent sex partners. Only 43% reported using condoms in every sexual encounter. More than half were identified as gay, bisexual or transgender, while almost one-quarter reported being heterosexual. Almost all self-identifying heterosexuals (19/22) were 'bugarrones', a term used to describe men who engage in transactional sex with other men.

### Last five sexual encounters

We asked detailed questions about the participant's last five sexual encounters (**table 2**). There were a total of

**Table 1** Sociobehavioural characteristics

Demographic characteristics	STI+ (n=41)	STI- (n=59)	p Value*
Median age (range)	30 (20–49)	21 (18–65)	<0.0001
Median age at first sex (IQR)	14 (13–16)	14 (12–16)	0.70
Median educational level (range)	9 (0–17)	10 (3–16)	0.15
Income ≤10 000 pesos (US\$230)	28 (35%)	51 (65%)	<b>0.03</b>
Unemployed (yes) (n, %)	12 (29%)	29 (71%)	<b>0.04</b>
Single (yes) (n, %)	40 (42%)	56 (58%)	0.51
Substance abuse			
Median days of alcohol consumption per week (range)	1 (0–7)	2 (0–7)	0.27
Drug use in the past year (yes) (n, %)	11 (34%)	21 (66%)	0.36
Sexual history and behaviours			
Inconsistent condom use (yes) (n, %)	23 (40%)	34 (60%)	0.88
Median number of male partners in past 30 days (range)	1 (0–50)	1 (0–6)	–
Median number of female partners in past 30 days (range)	1 (0–15)	1 (0–6)	0.69
History of sex with tourists (yes) (n, %)	22 (56%)	17 (44%)	<b>0.009</b>
History of sex work (yes) (n, %)	35 (45%)	43 (55%)	0.14
History of having paid for sex (yes) (n, %)	18 (39%)	28 (61%)	0.72
Concurrent sex partners (yes) (n, %)	38 (42%)	53 (58%)	0.62
Sexual position, n (%)			
Always insertive	19 (31%)	42 (69%)	<b>0.01</b>
Receptive or versatile	22 (56%)	17 (44%)	
Sexual identity, n (%)			
Gay	10 (45%)	12 (55%)	<b>0.008</b>
Bisexual	12 (52%)	11 (48%)	
Transgender	7 (100%)	0 (0%)	
Heterosexual	7 (32%)	15 (68%)	
Other	3 (21%)	11 (79%)	
No response	1 (17%)	5 (83%)	

Bold typeface indicates statistical significance at p<0.05.

\*Two-sample t test for difference in means of continuous variables and  $\chi^2$  test for categorical variables.

STI, sexually transmitted infection.

**Table 2** Analysis of last five sex partners (N=471 sex encounters)

Variable	N (%)	Consistent condom use n/N (%)
Partner type		
Regular	139 (30)	78/138 (57%)*
Casual	183 (39)	152/183 (83%)
Client	96 (20)	84/94 (89%)
Sex worker	53 (11)	42/53 (79%)
Gender		
Male	273 (58)	223/271 (82%)
Female	198 (42)	133/197 (68%)
Condom use		
Yes	356 (76)	–
No	112 (24)	–
Encounters where partner was a tourist	24 (5)	22/24 (92%)
Role assumed during sex with men		
Insertive	125 (46)	108/125 (86%)
Receptive	125 (46)	100/124 (81%)
Versatile	21 (8)	15/21 (71%)
Practices during sex with women		
Vaginal	159 (80)	105/158 (66%)
Anal	12 (6)	7/12 (58%)
Both	27 (14)	21/27 (78%)
Substance abuse during sex		
No alcohol or drugs	333 (71)	241/331 (73%)
Alcohol	100 (21)	85/100 (85%)
Drugs	19 (4)	15/19 (79%)
Both	17 (4)	14/17 (82%)

\*The total number of participants in each column (N) may be different because some individuals did not answer the questions on condom use.

471 individual sex encounters. Almost half of these encounters were with women and only one-third were with a regular partner. When asked specifically about their last five sexual encounters, we found a higher proportion of condom use during casual or transactional sex and a lower frequency of use with female or regular partners. Substance use was high during these encounters.

### Sex work

Three-quarters of participants had received payment in exchange for sex in their lifetime. In 90% of these cases, the client on their last commercial sex encounter was another man. The majority of these men (80%) reported assuming the insertive role in the latest encounter, and 12% did not use a condom on their last paid sexual exchange. Almost half of participants reported having paid another person for sex. In the majority of cases (87%), these men paid a woman on their last transactional encounter. Thirty-five of the men who had paid a woman for sex had themselves received payment for sex, mostly from other men.

### Knowledge of HIV

Knowledge of HIV risk factors was high. Almost universally (95%) participants knew that consistent condom

use is effective in preventing HIV infection, recognised monogamous sex with an uninfected partner as protective against infection (87%) and knew that sharing needles with an infected partner transmits the disease (96%). The majority (88%) recognised that anal intercourse increases HIV infection risk. Ninety-five per cent knew that HIV was not evident by looking at someone and 97% reported knowing that effective treatment is available for HIV-infected people. Three-quarters had been tested for HIV prior to the study.

### Violence, stigma and discrimination

Eleven per cent of participants reported being forced or coerced the first time they had intercourse with another man, and almost one-quarter had experienced verbal insults because of their sexual orientation over the preceding 12 months. The majority (78%) of men harassed because of their sexual orientation self-identified as gay, bisexual or transgender. Only four individuals reported having experienced violence, and three individuals reported being raped in the preceding 12 months.

### Sexual practices and sexually transmitted diseases

Table 1 describes the frequencies of sex roles. All men identifying as heterosexuals (22/22) and the majority of bisexuals (16/23) were exclusively insertive. Gay and transgender individuals were for the most part versatile or receptive. Few (11%) reported having an STI in the past, 14% had experienced dysuria and 6% reported urethral discharge over the preceding year. Very few ( $\leq 5\%$ ) reported ever having ulcerative disease of the penis, pharynx or anal area. Most (93%) reported that access to condoms was either very easy or somewhat easy. By contrast, almost half stated that access to lubricant was difficult.

Thirty-eight men tested positive for HSV-2, 13 were positive for syphilis and 5 were HIV positive. Two of the HIV-positive participants were aware of their status at the time of recruitment, and three were newly diagnosed; 85% (n=11) of men with syphilis and 80% (n=4) of HIV-infected patients were co-infected with HSV-2. One HIV-positive participant was co-infected with syphilis. There were no cases of hepatitis B or C. There were a total of 41 participants in the combined end point of any STI.

### Bivariate and multivariate analyses

Table 3 shows the results of the bivariate and multivariate analyses. Stratified analysis and multivariate model interaction testing did not yield any significant effect modifier. Some of the two-way interactions considered were between sex with tourists and sex work;  $\geq 2$  male partners and sex work; and age and sex with tourists. The final multivariate model included variables statistically associated with the outcome of 'any STI' and one additional variable, 'history of sex work', that although not associated with the outcome in the univariate analysis, the authors considered important to include, given the increased risk of STI in individuals who engage in

**Table 3** Multivariate analysis

Variable	All STI unadjusted	All STI adjusted
Age >22 vs ≤22 years	<b>7.1 (2.9–17.4)</b>	<b>11.1 (3.6–34.5)</b>
GBT versus heterosexual	2.7 (0.9–7.7)	
Receptive versus insertive anal intercourse	<b>2.9 (1.2–6.6)</b>	<b>4.2 (1.3–13.6)</b>
Sex with ≥2 vs <2 men in last month	<b>3.4 (1.4–8)</b>	<b>4.0 (1.3–12.5)</b>
Drinking >2 vs ≤2 days/week	0.6 (0.2–1.6)	
Paid for sex (yes vs no)	0.9 (0.4–1.9)	
Sex work (yes vs no)	2.2 (0.8–6.1)	3.6 (0.8–16.3)
Drug use (yes vs no)	0.7 (0.3–1.6)	
Concurrent sex partners (yes vs no)	1.4 (0.3–6.1)	
Ever had sex with tourists (yes vs no)	<b>3.0 (1.3–6.9)</b>	1.8 (0.6–5.1)

Bold typeface indicates OR >1 with confidence intervals that cross 1. GBT, gay, bisexual or transgender; STI, sexually transmitted infection.

sex work. Factors associated with testing positive for any STI in multivariate analysis were: age >22 years (OR=11.1, 95% CI 3.6 to 34.5), history of receptive anal intercourse (OR=4.2, 95% CI 1.3 to 13.6) and reporting ≥2 male sexual partners during the preceding month (OR=4, 95% CI 1.3 to 12.5).

## DISCUSSION

This study examined risk behaviours and estimated point prevalence of five STIs in a group of GMT residing in the province of La Romana, DR. A considerable number of these men reported high-risk sex behaviours: one-third had two or more male sex partners during the preceding month, and less than half consistently used condoms. One-quarter of the 471 sexual encounters were unprotected, and almost three-quarters were either with a casual partner, a client or a sex worker. Condom use was higher with non-regular partners. A previous study of Dominican GMT found similar low rates of condom use in men practising insertive (30.7%) and receptive (25.6%) intercourse.<sup>11</sup> Contrary to other studies,<sup>12–14</sup> drug abuse and frequent alcohol consumption were not associated with STI prevalence. The high use of sexual stimulants (22%) in this group is worrisome, given its known association with unprotected anal intercourse.<sup>15</sup>

The prevalence of STI was high in this group. A total of 38% of participants were seropositive for HSV-2, which is consistent with other studies that have reported prevalence between 32% and 48% in Caribbean<sup>16</sup> and Central American<sup>17</sup> countries. To our knowledge, this was the first study that estimated point prevalence of HSV-2 in the DR. Our observed 5% HIV prevalence falls

within the range of 4–7% reported by the Ministry of Health (MoH) for Dominican GMT residing in five sentinel provinces.<sup>8</sup> This proportion is lower than reported in GMT in Central America (8–15%),<sup>17</sup> South America (12%)<sup>18</sup> and Mexico (17%).<sup>19</sup> Thirteen per cent of men had serological evidence of syphilis. A systematic review of 35 studies evaluating syphilis prevalence in GMT in the LAC region found rates higher than 8% in half of the studies.<sup>2</sup> The DR MoH has reported a prevalence ranging from 10% to 19%, which is consistent with our findings. The absence of HBV and HCV cases is not unexpected in this small group in a country with relatively low prevalence of these diseases in the GMT population (HBV: 0.3–4%, HCV: 0–2%).<sup>8</sup>

Although the majority of participants (n=81) had a history of sex work, this was not associated to STI prevalence. Sexual role was a more important risk factor with receptive partners having higher odds of being infected with a STI. The fact that two-thirds of men who reported ever engaging in sex work were only insertive during same sex encounters and the high frequency of condom use during transactional sex may help explain this lack of association. The link between receptive intercourse and HIV/STI prevalence is well established.<sup>20–23</sup> Additional factors associated with the odds of acquiring a STI in this study were older age and having ≥2 male partners during the preceding month, expected findings that are consistent with previous studies of GMT.<sup>20–24</sup>

Within the group identifying as heterosexual, there were 20 self-described ‘bugarrones’, a group of sex workers well characterised in qualitative studies<sup>10–25</sup> who assume the insertive role in most transactional encounters. A recently published study from Peru also found a high proportion of only insertive sex workers.<sup>26</sup> These sexual exchanges where the sex worker or self-identifying heterosexual assumes the ‘masculine’, more hegemonic sex role are frequent in the LAC region and have been reported by other investigators.<sup>23–27</sup> In contrast, a meta-analysis of Chinese studies reported a higher frequency of receptive role in sex workers (money boys) compared with the broader GMT population.<sup>28</sup> This underscores the importance of examining the social and cultural context when studying these interactions. An unexpected finding was the significant proportion of heterosexually identifying men who had been consumers of female commercial sex. Almost half of the 471 sex encounters were with women, and in nearly one-fifth of those encounters, either anal or both anal and vaginal intercourse were practiced. This bisexual behaviour coupled with these risky sexual practices within the context of commercial sex work are very important for STI prevention, considering the potential for disease transmission to women. These bridging GMT populations are well documented in other studies conducted in the LAC region.<sup>29–30</sup>

The main strength of this study was that it identified risk behaviours and estimated STI prevalence in a group of GMT in the province of La Romana, a previously

unstudied population. It is also the first study to estimate point prevalence of HSV-2 in Dominican GMT. We interviewed and tested for STI a significant number of bisexual sex workers who are important targets of HIV prevention strategies. This, however, limits the extrapolation of the findings to the broader population of GMT who may have a lower risk of STI. The use of sexual network referrals, a non-random method to sample the population, also limits the external validity of the findings. The cross-sectional design, the reliance on self-reported behaviours, the small sample size and the probability of recall bias are also limitations of this study.

In summary, the prevalence of STI was high and risk behaviours were common in this group of GMT. These results are important because they provide preliminary data to help inform HIV/STI prevention programmes targeting GMT in this area of the country. MoH and other stakeholders should implement interventions with special attention to young GMT, those who practice receptive intercourse and individuals who have multiple sex partners.

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**Competing interests** None declared.

**Ethics approval** The research protocol was reviewed and approved by the Institutional Review Board of the University of Illinois at Chicago and the Ethics Committee of the Instituto Dermatológico y Cirugía de Piel in Santo Domingo, Dominican Republic.

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